

AMENDMENTS TO THE CLAIMS

Claim 1. (Currently Amended) A force or pressure sensor, comprising a substantially rigid, mechanical-load resistant frame (1), a flexible diaphragm (2) secured over its peripheral rim to the frame (1), and a piezoelectric sensor diaphragm (3) applied to the surface of the flexible diaphragm (2), ~~characterized in that~~ wherein the sensor diaphragm (3) loading element comprises a substantially rigid cover (4) capable of carrying mechanical loading of more than 50 kg, ~~preferably more than 100 kg, that~~ wherein the cover (4) ~~has~~ includes a protrusion or shoulder (4a), bearing against a middle section of the flexible diaphragm (2) and thus, by deflection, prestressing the flexible diaphragm (2) and the piezoelectric sensor diaphragm (3) attached thereto, and ~~that~~ wherein the frame (1) and the cover (4) define therebetween a closed housing chamber, the flexible diaphragm (2) and the piezoelectric sensor diaphragm (3) being located thereinside.

Claim 2. (Currently Amended) ~~A~~ The sensor ~~as set forth in~~ of claim 1, ~~characterized in that~~ wherein the frame (1), the cover (4), and the diaphragms (2, 3) are rotationally symmetrical relative to the cover protrusion or shoulder (4a).

Claim 3. (Currently Amended) ~~A~~ The sensor ~~as set forth in~~ of claim 1 ~~or 2~~, ~~characterized in that~~ wherein the flexible diaphragm (2) comprises a thin metal diaphragm, having its peripheral rim secured between the edges of the frame (1) and the cover (4).

Claim 4. (Currently Amended) ~~A~~ The sensor ~~as set forth in~~ of claim 1-3, ~~characterized in that~~ wherein the sensor diaphragm (3) comprises a piezoceramic diaphragm, having a diameter smaller than that of the metal diaphragm (2), ~~and that~~ further wherein the sensor diaphragm (3) has its peripheral rim at a distance from the inner periphery of the housing chamber.

Claim 5. (Currently Amended) A ~~The sensor as set forth in any~~ of claims 1-4, ~~characterized in that~~ wherein a sensor-signal transmitting contact spring (5) is in contact with the sensor diaphragm (3) opposite to the cover protrusion or shoulder (4a).

Claim 6. (Currently Amended) A ~~The force or pressure sensor as set forth in any~~ of claims 1-5, ~~characterized in that~~ wherein an amplifier (6) and its a circuit board (7) are located in said housing chamber.

Claim 7. (Currently Amended) A ~~The sensor as set forth in any~~ of claims 1-6, ~~characterized in that~~ wherein the frame (1) and the cover (4) comprise elements in the shape of bodies of revolution.

Claim 8. (Currently Amended) A ~~The sensor as set forth in any~~ of claims 1-7, ~~characterized in that~~ wherein the sensor has a responsivity, such that the sensor provides an output signal when the change of a load applied to the cover (4) is less than 10^{-6} , ~~preferably less than 10^{-8} times the~~ load rating of the cover (4).

Claim 9. (Currently Amended) A ~~The sensor as set forth in any~~ of claims 5-8 6, ~~characterized in that~~ wherein the amplifier (6) has its input impedance matched to provide a desired settling time, during which the amplifier (6) has its output set substantially to zero, while the loading applied to the cover (4) respectively remains essentially unchanged.

Claim 10. (Currently Amended) A ~~The sensor as set forth in any~~ of claims 1-9, ~~characterized in that~~ wherein the closed housing chamber is hermetically sealed.

Claim 11. (Currently Amended) A ~~The sensor as set forth in any~~ of claims 1-10, ~~characterized in that~~ wherein ~~that~~ the cover (4) is provided with an adapter element (10, 11), which enables loading of the cover with changes in a fluid or gas pressure.

Claim 12. (Currently Amended) A method for using a force or pressure sensor, comprising a substantially rigid, mechanical-load resistant frame, a flexible diaphragm secured over its peripheral rim to the frame, and a piezoelectric sensor diaphragm applied to the surface of the flexible diaphragm, wherein the sensor diaphragm loading element comprises a substantially rigid cover capable of carrying mechanical loading of more than 50 kg, wherein the cover includes a protrusion or shoulder, bearing against a middle section of the flexible diaphragm and thus, by deflection, prestressing the flexible diaphragm and the piezoelectric sensor diaphragm attached thereto, and wherein the frame and the cover define therebetween a closed housing chamber, the flexible diaphragm and the piezoelectric sensor diaphragm being located thereinside ~~applying a force or pressure sensor as set forth in any of claims 1-11, characterized in that~~ comprising the steps of disposing one or more sensors (13) are disposed in contact with a bed (12), and measuring a sleeping or lying person ~~is measured~~ for his or her heart rate and respiratory amplitude, as well as frequency.

Claim 13. (Currently Amended) A ~~The method as set forth in~~ of claim 12, ~~characterized in that~~ wherein the measurement is implemented with one or more sensors (13) placed under a bed post or posts.

Claim 14. (Currently Amended) A ~~The method as set forth in~~ of claim 12, ~~characterized in that~~ wherein the measurement is implemented with one or more sensors (13) placed in contact with a bed mattress (14, 15), ~~especially between a top mattress (14) and an actual mattress (15),~~ and the sensor is prevented from sinking in the top mattress and/or the mattress with panels (21, 22), which are more rigid than the mattresses and between which the sensor (13) is positioned.